Does political accountability matter for infrastructure regulation? The case of telecommunications

Laura Recuero Virto and Farid Gasmi and Paul Noumba Um

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Does political accountability matter for infrastructure regulation? The case of telecommunications[1].

Farid Gasmi
Toulouse School of Economics (ARQADE & IDEI)
Université Toulouse 1 Capitole

Paul Noumba
The World Bank

And

Laura Recuero Virto
OECD

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Abstract

This paper discusses the link between political accountability, regarded as an important aspect of institutional design, and infrastructure regulation that has been emphasized in the recent literature on the role of institutions in economic development. We report on the findings and lessons drawn from an analysis of telecommunications data covering the period 1985-1999 on two sets of countries; one composed of 29 developing countries and another of 23 developed countries. The main point highlighted by the analysis is that infrastructure regulation in a given country cannot be independent of the institutional environment, in particular, the degree of political accountability that supports the country's institutions. The argument is demonstrated by means of an econometric estimation of dynamic panel data models that shows evidence of a significant effect of pro- political accountability factors on regulatory performance as reflected in measures of sector output and efficiency. Expectedly enough, this effect is found to be more pronounced in the developing countries data set. A key policy implication of this result is that efforts to enhance institutional quality and support politically accountable systems in developing countries should yield large benefits for infrastructure regulation.

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1. Introduction

During the last two decades a worldwide wave of economic reforms has significantly affected the organizational and institutional landscape of infrastructure sectors including telecommunications, electricity, water, and the like. In developed countries, the main purpose of the reforms has been to enhance the efficiency of these sectors traditionally organized as vertically integrated monopolies. The policy objective in these coutries has then been to redesign the legal and regulatory framework so as to induce "proper" economic incentives, namely, incentives for operators in the infrastructure sectors to improve their cost efficiency, quality of service, and tariffs.

While the reforms conducted in developing countries follow the same principles, they differed in their implementation in at least two respects. First, even though there was clearly room for improving the performance of infrastructure sectors in developed countries, the availability of service didn’t pose a fundamental problem. In contrast, in developing countries service was sometimes merely non existent and, in the case of telecommunications, networks were not developed in large parts of the rural areas. Second, institutional design in developing countries was far more challenging than in developed countries. Developed countries typically needed to modernize an existing social and institutional fabric with a complex system of operating rules built over a long history of political and economic administration of market economies. This crucial experience was just lacking in developing countries. Beyond the fact that these countries with poor human capital endowments had to follow the industrialized world in the setting of totally new institutions, they had to reform their old inadequate administrative functioning rules.

After a period of implementation of policies of liberalization and privatization of some segments coupled with the creation of regulatory authorities, large efforts have been allocated to improve the efficiency of these authorities. Independence of regulatory authorities, capacity of their human resources, and quality of regulatory governance in the sector are the three policy items that have mobilized much of these efforts. On the research front, however, both theoretical work on the optimal design of regulatory institutions and empirical work on the measurement of regulatory institutions' performance suggest that these specific items should not be considered independently from factors related to the governance of the economy as a whole. This paper is concerned with the relative weight of these sector-specific and economy-wide determinants of the performance of infratrsucture regualtion. This paper reports on an investigation of this issue for the case of telecommunications by means of an econometric analysis of two data sets, one on developing countries and another on developed countries.

The determinants of regulatory performance have been discussed both in the theoretical and empirical streams of the literature on infrastructure industries regulation. We distinguish two approaches. A first approach, which is conceptual in nature and inspired by political science, argues that when thinking about regulatory performance the relevant game is the one that takes place upstream at the (higher) level of politics (Spiller and Tommasi, 2005). Another more empirical approach emphasizes the impact of regulatory governance on performance (Cubbin and Stern, 2005b). Our general view is that the relationship between political and regulatory structures and processes has to be given due attention when assessing regulatory performance. Hence, our study is an attempt to merge both of these approaches in order to feed in some empirical elements to the debate on the relationship between political and regulatory institutions that so far has mainly taken place at a conceptual level.

The empirical strategy adopted is based on a set of econometric regressions with a special attention given to variables that give some indications on the "degree" of political accountability that characterize the economic institutions of a country. How politically accountable is an economic

system depends on the existence and the degree of implementability of "..a proactive process by which public officials inform about and justify their plans of action, their behavior and results, and are sanctioned accordingly." (Ackerman, 2005) We consider political accountability as fundamental in the exercise of the link between political structures and regulatory processes and hence view its (political-game) equilibrium level as an important determinant of the regulatory process' performance. This leads up to test in our data the hypothesis that, all things equal, "more" political accountability should enhance the performance of infrastructure regulation. A further conjecture that the empirical analysis allows us to test is that this hypothesis dinds stronger support in the data on developing countries.[1]

This paper is organized as follows. The next section decribes some theoretical and empirical arguments developed in the recent literatures on the design of institutions and on the evaluation of regulatory performance in infrastructure sectors. This section is by no means an exhaustive survey but its goal is to show that there is a need to merge these two streams of the literature on regulatory institutions. Section 3 is devoted to a description of the data and a discussion of their general properties. Section 4 discusses the findings of our empirical analysis of the relationship between political accountability and the performance of infrastructure regulation. Section 5 summarizes the empirical results and discusses some policy implications. The appendix gives some standard summary statistics of the data.

2. Institutions and regulatory design and outcomes - What do we know?

Recent contributions to the theory of the design of institutions and empirical work concerned with the measurement of their performance have brought to daylight the issue of the evaluation of the performance of regulation. Laffont (2005) provides some edifying thoughts on the design of regulatory institutions in developing countries.

Two approaches have been followed to examine the determinants of regulatory performance and outcomes. A first approach is conceptual and analyzes the role of political structures and processes. A second approach, more empirical, emphasizes the impact of the quality of regulatory governance. We briefly review the main arguments developed by these two approaches and point to the need to develop a unified analytical framework. This paper is an empirical effort in this direction.

The first approach analyzes the relationship between political structures and processes and the conduct of regulation by emphasizing the need to open the black box of the organization and functioning of governments (Estache and Martimort, 1999, North, 2000).[2] In their analysis of the link between politics and regulation in the US, McCubbins et al. (1987) argue that, by reducing the costs of monitoring and by sharpening sanctions, administrative procedures can give rise to an equilibrium in which compliance with the preferences of political agents is greater than it otherwise would be.[3] This relationship is further explored by Levy and Spiller (1994) in the telecommunications sector through an analysis of case studies. In particular, they evaluate the potential for political agents to manipulate the regulatory process. They find that sector performance can be satisfactory under a wide range of regulatory procedures as long as arbitrary administrative decisions can be restrained.

[1]From a normative perspective, since a better regulatory performance is expected to improve social welfare, this would suggest that marginal social benefit of political accountability is higher in developing countries.

[2]By emphasizing the political game, this approach fits in the *New Institutional Economics* paradigm that takes its foundations in the precepts of transaction cost theory and positive political economy. This paradigm constitutes an important departure from the standard normative approach to public economics.

[3]Bottom-up "fire-alarm" monitoring through external agents affected by regulatory policies is a good example of a method that can reduce the informational costs of following the activities of agencies (McCubbins and Schwartz, 1984).

The link between the political and regulatory spheres is further analyzed in Spiller and Tommasi (2005) through the impact that the characteristics of political environments have on the ability of political agents to reach intertemporal cooperation. They argue that long-term political cooperation is likely to lead to stable and flexible regulatory policies, hence, to effective regulation. This is particularly true when the agents with decision power have strong intertemporal relationships, policy and political moves are widely observable, good enforcement technologies are available, and the short-run payoffs from noncooperation are not so high. They further argue that less efficient regulatory rules resulting from a rigid regulatory context may in fact provide incentives for investment whereas granting discretion to the regulator may lead to arbitrary outcomes if institutional endowments are low.

Heller and McCubbins (1996) argue that incentives for investing in infrastructure industries are not credible within a given regulatory structure unless there is a political context that makes them sustainable. Regulatory predictability is a key feature for gaining credibility and political institutions play an important role in enhancing this predictability. The higher the quality of the political and institutional environment, the harder it is to change regulatory structures and procedures. In particular, the more veto political players with effective authority there are, the easier it is to block policy change. The main argument of this line of policy research is that the more established political structures and processes, the higher the cost of institutional change, and the more efficient the conduct of regulation.

Let us now briefly review the empirical approach that emphasizes the role of regulatory governance. The fundamental belief that motivates much of this line of research that essentially deals with infrastructure industries is that good regulatory governance is a prerequisite to a proper functioning of the positive relationship between regulatory incentives and regulatory performance. This belief is based on the conjecture that "...regulatory agencies with better governance should make fewer mistakes, have their mistakes identified and rectified better and more quickly, so that good regulatory practice is more readily established and maintained." (Cubbin and Stern, 2000a).

The basic empirical implications of these hypotheses is that, thanks to the structuring and the practice of regulation it entails, e.g., as an independent regulator making transparent regulatory decisions, better regulatory governance increases supply capacity and enhances productive and allocative efficiency. In the case of telecommunications, these implications are typically tested in data collected on a set of developing countries observed during a given time period. Regulatory performance is measured by mainline penetration rates and/or mainlines per employee, and regulatory governance is captured in an index that aggregates a set of aspects related to the structuration and internal organization of regulation (Gutierrez, 2003a).[4] Overall, when applied to telecommunications (Gutierrez, 2003b) and electricity (Cubbin and Stern, 2005a), the methodology yields a positive impact of regulatory governance on such regulatory output measures. For a survey of empirical studies on regulatory governance and performance in developing countries, see Cubin and Stern (2005b).

A typical contribution to this line of research starts from the global conceptual view that "…institutional quality is the dominant determinant of variations in long-term growth performance." (See Cubbin and Stern, 2005a and the citations thereof) However, in its implementation part, often it

[4]These studies and ours use "outcome variables" to measure regulatory performance. A more rigorous assessment of regulatory performance entails conducting surveys to capture the quality of regulators' decisions which ultimately impact sector outcomes (see, e.g., Correa et al, 2008 and Brown et al, 2006). Such surveys do not exist but would definitely, if undertaken, provide a better indication of the performance of regulation in infrastructure industries.

only accounts for micro dimensions of institutional quality embodied in what is referred to as the quality of regulatory governance. Our view is that this approach should substantially gain in richness by drawing lessons from the literature on the design of institutions discussed earlier in this section. We take a step towards a unified approach that, when evaluating regulatory performance, in addition to specifying variables of regulatory governance, explicitly incorporates variables linking political and regulatory structures and processes. In our analysis, the variables through which the interface between political and regulatory structures and processes is going to materialize are variables that are used to proxy the concept of political accountability as described in the introduction.

A key idea on which this approach rests is that limiting the use and sanctioning the abuse of political power should help disentangling regulatory processes from the opportunistic behavior of political agents.[5] The elections mechanism should, in principle, ensure political accountability since citizens select representatives who hold bureaucrats and members of the judiciary system accountable for their behavior. However, this property of elections is hard to satisfy since the electoral process suffers from important information asymmetries between elected politicians and citizens and lack of politicians ex post accountability. Privatization of government monopolies, liberalization, and the application of private management principles to state-owned entreprises, have proven to be policies that improve political agents' accountability in a much more targeted way. However, when analyzing regulatory performance, beyond giving full consideration to such pro-accountability reforms as the above "marketization" policies, to the independence of the regulator, and to other factors related to the sector's regulatory governance, we think that it is also important to give due attention to other pro-accountability factors that are related to the governance of the economy as a whole. Implementing this thought is at the heart of our empirical study to which we now turn.

3. Data on regulatory outcomes and institutional environment

This section gives a broad description of the data used in this study and discusses some of their general properties. We have constructed two data sets both covering the period 1985-1999, one on developing countries and another on developed countries.[6] The countries included in the data set on developing countries are India, Sri Lanka, Malaysia, Pakistan, Thailand, Ivory Coast, Ghana, Kenya, Malawi, Tanzania, Uganda, South Africa, Jordan, Morocco, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Panama, Peru, El Salvador, and Venezuela. Those included in the data set on developed countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States. For each of these countries, we have collected information on variables regrouped into the four categories "Regulatory performance," "Local accountability," "Global accountability," and "Other variables." Table 1 below gives the list of these variables along with their designation. For a precise definition of these variables and the data sources, see Gasmi et al. (2006).

As indicated above, regulatory performance is measured by the level of output (mainline penetration or cellular subscription), efficiency (mainlines per employee), or price (fixed residential, cellular).[7] In view of the conceptual framework discussed in the previous section, we have regrouped variables that inform us on the existence of political accountability into variables of "local" and "global"

[5]As noted by Spiller and Tommasi (2005), opportunistic behavior of politicians can be expected in infrastructure industries because of the important economic stakes involved.

[6]For reasons discussed in the introduction, these two data sets have been subject to separate estimation though to comparative result analysis.

[7]These outcome variables are indirect measures of regulatory performance based on objective data on regulated firms as opposed to direct measures based on subjective data reported by surveyed regulatory agencies.

accountability meant to represent the quality of, respectively, regulatory governance in the sector and political governance at the level of the whole economy. Therefore, local accountability is captured in variables reflecting the degree of political and financial independence of the regulator, the level of transparency of accounts and regulatory decisions, the clarity of the allocation of responsibilities among institutions, the nature of the legal environment, and the degree of social participation in regulatory decisions.[8] As to global accountability, it is captured in variables reflecting the quality of the institutional framework (government integrity, efficiency of bureaucracy, strength of courts and enforcement capacity, government commitment capacity, and currency risk) and the quality of the political process (strength of checks and balances).[9]

Table 1
Variables and designation

Variable	Designation
Regulatory performance	
ml	Mainline penetration
cel	Cellular subscription
eff	Mainlines per employee
p_res	Monthly subscription to fixed
p_cel	Price of cellular
Local accountability	
reg	Regulatory governance index
Global accountability	
corruption	Corruption
bureau	Bureaucracy
law	Law and order
expropri	Expropriation
currency	Currency risk
institutional	Institutional environment index
checks	Checks and balances
Other variables	
priva	Privatization
comp_fix	Competition in fixed
comp_cel	Competition in cellular
rural	Rural population
density	Population density

The variables in the group of other variables are introduced to control for some effects deemed important when estimating the relationship between political accountability and regulatory performance. Given that the telecommunications sector has undergone significant market structure changes during the period under study, we have included some reform variables that inform on the privatization of the incumbent and the introduction of competition in fixed and cellular service as the

[8]Our study contributes then to the literature on the impact of the infrastructure industries reforms by extending the set of variables capturing regulatory governance. In that respect, it stands along the line of Gutierrez (2003b) and Holder and Stern (1999) who have constructed detailed indices of regulators' characteristics in Latin American countries for the telecom sector, and in Asian countries for the electricity sector, respectively. The importance of these dimensions for regulatory agencies to be sustainable has been emphasized (Estache and Martimort, 1999). In our data samples, in 26 of the 29 developing countries and 21 of the 23 developed countries, the regulator has become independent at some point during the period under study.

[9]Both the empirical and theoretical literatures suggest that it is not so much the extent of democracy that is relevant to investors but rather the ability of the government to credibly commit to a policy regime. The level of policy stability is captured here through an index that indicates whether there exists an "effective" number of checks and balances.

liberalization of these segments has arguably had different market implications (Gasmi and Recuero Virto, 2006). During the period spanned by our samples both developing and developed countries countries have been extensively engaged in reforms of their telecommunications industries formerly organized as state monopolies. In our data set on 29 developing countries, 18 of these countries have partially privatized their historical operator, 14 have introduced competition in the local fixed-line segment, and 24 have introduced competition in the cellular segment. In our data set on 23 developed countries, these figures are respectively 20, 10, and 15. In both types of countries, the reforms have coincided with the introduction of new technologies that have significantly reduced costs and increased demand. We have also included in this group of control variables some country-specific demand features that inform us on the population (density) and its distribution (urban vs rural).

Table 2 below provides the correlation coefficients between the variables representing regulatory performance and those representing political accountability.[10] We see from this table that the correlation between the variables of regulatory performance and political accountability is generally stronger for developing countries than for developed countries. This is particularly so when regulatory performance is measured by mainline penetration, cellular subscription, or mainlines per employee, and political accountability is captured by the strength of checks and balances. The same is true when regulatory performance is measured by mainlines per employee and political accountability is captured by the regulatory governance index, and when regulatory performance is measured by cellular subscription or price of cellular and political accountability is captured by the quality of the institutional environment. We also note that, in both samples, the regulatory performance variables tend to correlate relatively "more"' with the variables that reflect the quality of the broad institutional environment than those that reflect the quality of regulatory governance in the sector.

Table 2
Correlation coefficients
(developing countries,developed countries)

		Regulatory performance				
		ml	*cel*	*eff*	*p_res*	*p_cel*
Global accountability	*institutional*	(0.41,0.63)	(0.65,0.24)	(0.42,0.22)	(0.23,0.28)	(0.60,0.01
	checks	(0.34,0.07)	(0.39,0.04)	(0.36,0.01)	(-0.01,0.12)	(0.30,0.24)
Local accountability	*reg*	(0.19,0.43)	(0.57,0.55)	(0.30,0.05)	(-0.06,0.01)	(0.61,-0.07)

Note: In any entry (a,b) of the table, a concerns the developing countries and b the developed countries.

It is instructive to examine the evolution of these variables over the period spanned by the samples. When measured by mainline penetration, cellular subscription, or mainlines per employee, regulatory performance has, on average, increased twice as much in developing countries than in developed countries. This relatively higher increase of output in developing countries most likely reflects the fact that unmet demand was considerably more important in these countries in the early part of period. In contrast, when measured by the monthly subscription to the fixed service, which has increased in both developing and developed countries, or the price of cellular, which has decreased, regulatory performance has improved noticeably more in developed countries. This conclusion should be moderated though. First, the significantly higher increase of the monthly subscription to the fixed telephone service in developing countries might be due to the fact that policies of tariff re-balancing have been relatively more intense in these countries. Second, the significantly lower decrease of price of cellular in developing countries might reflect a relatively less mature and hence less effective competition in this segment of the market than in developed countries.

[10]Table A1 in the appendix provides some summary statistics of the data on the developing and developed countries.

To conclude this brief check up of the data, we should mention that we find that the quality of the institutional environment and the political process has shown a relatively higher improvement in developing countries during the period under study. But again, this observation should be taken with care at this point as it might only reflect the fact that these countries were considerably lagging behind on these two dimensions.

4. Does political accountability affect regulatory performance?

As indicated above, our investigation of the effect of political accountability relies on a set of regressions.[11] While the estimation of the coefficients of these regressions allows us to assess the (quantitative) impact of the political accountability variables on the regulatory performance variables, asking first whether there exists a causal relationship between these variables will allow us to meaningfully interpret this impact. We therefore performed some causality tests.[12] Table 3 below summarizes our findings on the existence of causal relationships in the two data sets analyzed.

It is fair to say that, overall, the results support the proposition that in both developing and developed countries there exists a causal relationship between political accountability and regulatory performance. This is particularly true when we examine political accountability through the quality of the institutional environment. Another interesting feature of the results is that global accountability variables seem to be in a stronger causal relationship with regulatory performance than local accountability variables, and this is even more so in developing countries. Even though the empirical evidence of such relationships is admittedly stronger in the data on developing countries, we feel that the importance of the issue from a policy point of view warrants a careful analysis of the quantitative aspects of these relationships, a task which is taken up next.

Table 3
(Granger -) Causality relationships
(developing countries,developed countries)

Variable	Local accountability	Global accountability	
	reg	*institutional*	*checks*
ml	(Yes,No)	(Yes,Yes)	Yes,No)
cel	(No,Yes)	(Yes,Yes)	(Yes,Yes)
eff	(No,No)	(Yes,No)	(No,No)
p_res	(Yes,Yes)	(Yes,Yes)	(Yes,No)
p_cel	(Yes,No)	(Yes,No)	(No,No)

Notes:
-In any entry (a,b) of this table, a concerns the developing countries and b the developed countries.
-A "Yes" ("No") indicates that evidence of a causal relationship running from the accountability variable to the regulatory performance variable has (has not) been found.

The preliminary analysis of the data performed so far sets the ground for a scrutiny of the relationship between political accountability and regulatory performance in the two data sets. In

[11]Our empirical investigation of the impact of political accountability on regulatory performance relies on a series of regressions in which the dependent variable is one that measures regulatory performance and the independent variables that retain much of our attention are those that are used to capture political accountability. We apply the Differenced Generalized Method of Moments (DIF-GMM) method developed by Arellano and Bond (1991) for analyzing panel data and applied by Beck and Katz (2004) to Time Series Cross-Sectional data. A technical issue that we addressed prior to estimation is that of stationarity of the dependent variable. To address stationarity, we followed a method sugested by Blundell and Bond (1998, 1999). See also Arellano and Bover (1995).

[12]These tests combine the DIF-GMM estimation technique with a Granger-causality testing procedure developed in Holtz-Eakin et al. (1988) for panel data.

addition to bringing empirical evidence on the causal relationship between political accountability and regulatory performance, the Granger-causality tests provided us with information on the dynamic structure of this relationship. The end-product of this testing procedure is a list of potential variables to be included as regressors when estimating the quantitative impact of political accountability on regulatory performance. In order to minimize the risk of estimation inaccuracy, a serious threat in the context of dynamic data analysis which is ours, we made sure that, if needed, the variables used to measure regulatory performance, the dependent variables, were transformed so as to make them stationary. The next step was to run DIF-GMM regressions using political accountability regressors drawn from the set of variables that have "passed" the causality test and for both the developing countries and developed data panesl.

Concerning the developing countries data, we find that, for any of the five variables used to measure regulatory performance, there is at least one variable used to represent political accountability that significantly affects it. Except when regulatory performance is measured by the monthly subscription to fixed, the sign of this impact is as expected, i.e., the higher the political accountability, the better the regulatory performance as reflected in higher output (increase in mainline penetration and cellular subscription), higher efficiency (increase in mainlines per employee), and lower prices (decrease in price of cellular).

The apparently counterintuitive case where we find that higher political accountability (less risk of expropriation for operators and stronger checks and balances) leads to a higher monthly subscription to fixed service might in fact only reflect the extent of tariff rebalancing that typically takes place in developing countries during the early stages of the reforms. When we distinguish local accountability (regulatory governance) from global accountability, it is interesting to note that the latter is more often found to have a significant impact on regulatory performance. Nevertheless, in the cases when it is found to be significant, the effect of regulatory governance on regulatory performance has the expected sign, namely, a better regulatory governance leads to a higher output and a lower price.

The results obtained with the data on the developed countries convey quite different messages and are generally poor compared with those obtained with the data set on the developing countries. In fact, some reasonable regressions could only be found when using either mainline penetration, cellular subscription, or monthly subscription to fixed to measure regulatory performance. As to the impact of political accountability on regulatory performance, the only sensible results that could be recovered from the data on developed countries are a positive effect of regulatory governance and checks and balances on cellular subscription and a monthly subscription to the fixed service that decreases when the currency risk to operators diminishes.

In both data sets, the time-specific effects are highly significant suggesting that attention should be given to important political and economic events in a given country when examining the performance of regulation. We also find that the reform variables are endogenous in all the regressions except when regulatory performance was measured by cellular subscription and by the monthly subscription to fixed in the data set on developing countries, and by the monthly subscription to fixed in the data set on developed countries. These results are consistent with the idea that reforms are increasingly performance-based.[13]

These findings suggest that, overall, there are reasons to believe that local accountability, synonymous in this paper to regulatory governance, generally affects regulatory performance in a significant way in developing as well as developed countries. The story is not so clear when it comes

[13]Endogeneity of regulatory policies has been discussed in Gasmi and Recuero Virto (2006), Gutierrez (2003), and Ros (1999, 2003).

to global accountability. In the data set on developing countries, we found that the quality of the political process and the institutional environment have a favorable impact on regulatory performance when the latter is evaluated by the level of output, price, or efficiency in the telecommunications industry. In contrast, in the data set on developed countries, while the quality of the political process has been found to have a positive impact on regulatory performance when the latter is measured by achieved output, the institutional environment showed an ambiguous impact when regulatory performance is measured by output and prices.

Table 4 below summarizes our findings. In this table, the signs "+" and "-" respectively indicate a positive and a negative impact of the political accountability variable indicated in the column on the regulatory performance variable indicated in the row. The variable *institutional* which is an index reflecting the quality of the institutional environment, is constructed by aggregating five indices reflecting the extent of corruption in the country (*corruption*), the burden of the bureaucracy (*bureau*), the strength of the judicial system and the degree of observance of the law (*law*), the risk of expropriation through outright asset confiscation or imposed nationalization (*expropri*), and the risk of losses to operators due to exchange rate fluctuations (*currency*).

Table 4
Impact of political accountability on regulatory performance
(developing countries,developed countries)

Variable	Local accountability	Global accountability	
	reg	*institutional*	*checks*
ml	(+,NA)	(NS,−)	(+,NA)
cel	(NA,+)	(+,NS)	(+,+)
eff	(NA,NA)	(+,NA)	(NA,NA)
p_res	(−,NS)	(+,−)	(+,NA)
p_cel	(−,NA)	(−,NA)	(NA,NA)

Notes:
-In any entry (a,b) of this table, a concerns the developing countries and b the developed countries.
-A "+" ("-") indicates that a positive (negative) and significant effect was found.
-"NS" indicates that no significant effect was found and "NA" stands for "not applicable."

5. Conclusions and lessons for regulators

The quality of political institutions has long been emphasized in both the academic and the institutional spheres as being a crucial determinant of economic performance. This paper has illustrated an approach that draws lessons from the recent conceptual literature concerned with the role of the economy-wide governance in the shaping of regulatory outcomes and feed them into the more empirical approach that directly examines the impact of sector-wide governance on regulatory performance. This "integrated" approach rests on the idea that political accountability is a key factor in the interface between political and regulatory structures. This approach is illustrated for the case of telecommunications in developing and developed countries by analyzing the impact of political accountability variables on regulatory outcome variables in two time-series-cross-sectional data sets.

Two sets of variables are used to capture political accountability: local accountability variables and global accountability variables. Local accountability variables include most of the features related to "regulatory governance," namely, unbundling of regulation from policy making, autonomy and independence of the regulator, accountability of the regulator, clarity in the allocation of mandates and attributes among government institutions, legal aspects, transparency of regulatory practices, and participation in the regulatory process. These variables are synthesized in a regulatory governance index. Global accountability variables include variables concerning corruption, bureaucracy, law and order, expropriation, currency risk, and checks and balances.

Using a data sample on developing countries and another on developed countries, the study measures the impact of these political accountability variables on some outcome variables variables meant to measure regulatory performance, namely, mainline penetration, cellular subscription, mainlines per employee, monthly subscription to the fixed, or price of cellular. The analysis has shown a relatively weak effect of political accountability on the performance of regulation in developed countries and a much more clear-cutting effect in the case of developing countries, namely, higher political accountability yields higher regulatory performance. What implications can one derive from such a finding for the telecommunications industry and to some extent for most of the infrastructure industries?[14]

During the last two decades, many developing countries have created regulatory agencies mostly relying on advice provided by international financial institutions and international lawyers to implement these regulatory models. New regulatory institutions were however not tailored or customized enough to fit the local cultural, political and social endowments. The study described in this paper again stresses this very important requirement for success in developing new institutions. Furthermore, the study goes beyond most current analyses in the area by extending the focus of the analysis to what has been referred to as issues of global accountability which reflect the quality of political institutions.

Recent contributions have deepened the understanding of regulatory effectiveness along two dimensions. The first dimension is regulatory governance, a concept which is a bit broader than what the concept of local accountability discussed here encompasses. The second is regulatory substance, a concept which is meant to capture the way regulation is actually performed. Brown et al. (2006) have proposed a comprehensive evaluation process of the effectiveness of regulatory institutions. If implemented, this process will highlight not only the structural weaknesses but also the deficiencies stemming from the surrounding environment of regulation, in particular, the political environment.

It is thus important to devise policy mitigation instruments that incorporate both of these dimensions. Unfortunately, common practices during the last decade or so have shown that donors' interventions are centered on structural issues. The analysis described in this paper clearly advocates for the definition of a set of instruments of effective intervention with the objective of achieving political accountability improvements in the practice of infrastructure regulation. Indeed, building regulatory institutions in developing countries should be part of a broader strategy of "good governance" and not only be considered, as it has been in the past years, as a sectoral matter. The empirical analysis reported in this paper has shown that the stake of such a broadening of the view of how regulatory institutions should be built in developing countries is important indeed.

Building regulatory institutions in developing countries has proven to be more complex than initially thought. The paper has argued that regulatory governance is a necessary but not a sufficient condition for good regulatory performance. Political accountability matters for the way regulatory institutions operate and make decision. Deepening the understanding of these inter-relationships calls for a better assessment of the political economy of infrastructure reforms as well as it entails proper analysis and understanding of how political systems work. This calls for a greater integration of work undertaken by economists and political scientists in the design of regulatory institutions. But, and after all, we need to keep in mind that building new institutions requires time. Regulatory institutions in developing countries still need to be supported. For development partners, this means a greater concentration of their efforts on countries where preconditions for success are relatively tangible.

[14]The results found for the telecommunications sector can be expected to hold in other infrastructures although this study calls for a careful account for the technological specificities of the other sectors.

Appendix

Table A1

Data summary statistics

(developing countries,developed countries)

Variable	Designation	Obs.	Median	Std. Dev	Min.	Max.
REGULATORY PERFORMANCE						
ml	Mainline penetration	(435,345)	(3.76,47.49)	(4.96,10.87)	(0.11,14.52)	(22.36,73.56)
cel	Cellular subscription	(431,344)	(0.01,2.55)	(2.09,13.51)	(0,0)	(15.96,63.37)
eff	Mainlines per employee	(424,345)	(53.06,166.08)	(58.85,57.53)	(7.78,43.48)	(371.16,358.76)
p _ res	Monthly subscription to fixed	(256,252)	(4.44,4.70)	(4.23,4.70)	(0,5.60)	(21.29,26.27)
p _ cel	Price of cellular	(324,192)	(0,1.40)	(0.53,0.86)	(0,0)	(2.24,4.95)
LOCAL ACCOUNTABILITY						
reg	Regulatory governance index	(435,345)	(0,0)	(4.60,3.11)	(0,0)	(13.5,8)
GLOBAL ACCOUNTABILITY						
corruption	Corruption	(435,345)	(5,8.33)	(1.43,1.37)	(1.66,3.33)	(10,10)
bureau	Bureaucracy	(420,345)	(5,10)	(1.86,1.33)	(1.66,4.5)	(10,10)
law	Law and order	(435,345)	(5,10)	(2.06,1.11)	(0,5)	(10,10)
expropri	Expropriation	(420,345)	(7.35,10)	(2.00,0.66)	(2,4.6)	(10,10)
currency	Currency risk	(435,345)	(6,9)	(1.98,1.16)	(1,4)	(10,10)
institutional	Institutional environment index	(435,345)	(28.66,47)	(7.10,3.99)	(8,25.26)	(41.16,50)
checks	Checks and balances	(423,345)	(3,4)	(2.06,1.62)	(1,2)	(18,16)
OTHER VARIABLES						
priva	Privatization	(435,345)	(0,0)	(0.32,0.48)	(0,0)	(1,1)
comp _ fix	Competition in fixed	(435,345)	(0,0)	(0.29,0.42)	(0,0)	(1,1)
comp _ cel	Competition in cellular	(435,345)	(1,0)	(1.10,0.47)	(0,0)	(3,1)
rural	Rural population	(435,345)	(49.82,24.70)	(20.95,12.73)	(10.95,2.95)	(90.31,62.84)
density	Population density	(435,345)	(48.07,94.59)	(79.39,119.50)	(5.38,2.01)	(330.34,466.49)

Note: In any entry (a,b) of the table, a concerns the developing countries and b the developed countries.

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